CHRISTIAN FAITH AND EVOLUTION:

ONE PERSON'S JOURNEY IN SCIENCE AND IN FAITH;

By

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DEDICATION

To my dearest grandmother who has challenged my beliefs both spiritually and academically.

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It gives me great pleasure to have such an influential support group. I would like to thank Dr. Stratton for continuous patience and also Dr. Douglass Sullivan-Gonzalez and Dr. Steven Skultety for their flexibility and input. I would like to thank the Sally McDonnell Barksdale Honors College for providing the proper resources needed to complete this work. Lastly, I would like to extend my appreciation to my family, friends and my church for their unconditional support.

ABSTRACT:

Evolution has always proved to be controversial to many people of faith, but it has been specifically problematic to many Christians including myself. This thesis explores the history and substance of the controversy between different expressions of Christianity and evolution by providing a relatable rendition of the theory of evolution. It breaks down the contributions of Charles Darwin and explains them in a manner than can be understood by a non-biologist. It also explores the stances of certain authors such as Richard Dawkins and Michael Ruse on the matter. This thesis is an independent study comprised of input from articles, journals, and books pertaining to the ongoing crisis.

The research shows that the battle between Christianity and evolution dates further back than Charles Darwin. The controversy precedes his contributions dating back as far as Nicolaus Copernicus and Galilee Galileo. Although Darwin receives most credit for the ongoing debate, it did not originate with him. This thesis also discovers that not all Christian denominations responded the same. The Catholic response, primarily a responsibility of the Vatican, had one of the earliest responses and was relatively open to the theory of evolution. The Protestants, including Anglicans and Baptists, had more diverse responses resulting in some supporting evolution while others opposed. As far as Dawkins' and Ruse's opinions on the relationship with evolution and Christianity, both present arguments that are rather unique. Dawkins feels that the Christian belief in God is ludicrous. Ruse argues that the two are indeed quite compatible. Overall, this thesis supports that Christian faith and evolution can coexist, and the teachings of evolution can even strengthen one's faith. This project allowed for the establishment for an analogy between evolution and God's role within the process. If evolution is the vehicle that propels our planet forward, then God is the G.P.S. system within the car. Although this thesis supports the coexistence of evolution and Christian faith, it also encourages Christians to find peace with evolution and like the theory explains, continue to develop and evolve one's faith just like in our natural world.

There is grandeur in this view of life, with its several powers,
having been originally breathed by the Creator into a few forms or into one;
and that, whilst this planet has gone circling on according to the fixed law of gravity,
from so simple a beginning endless forms most beautiful
and most wonderful have been, and are being evolved.

--Charles Darwin
On the Origin of Species

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Preamble:
A Personal Reflection

Since my early days, I have always had a passion for science. I admired learning the ways of life. From the tiniest cells to the study of aerospace, science always had a way of leaving me awe-struck. I continued to embark upon this scientific journey even in my late high school years until one day it struck a nerve. My high school biology teacher told our young but eager class about biologists' explanation of Creation and the process of evolution. Immediately, this knowledge infuriated me. How could this be so? My grandmother and pastor always taught me that God was the Creator and Sustainer of Life. From that moment onward, I knew I had some work to do. I knew that I would not rest until I had the truth behind such a cloudy contrast of concepts. Moving along to my freshman year at the University of Mississippi, I took Honors 102 with Dr. Brown. The topic was, of course, religion vs. science. This semester only added fuel to the fire. Upon completion of the course, I left with a solid focus for the rest of my collegiate career: is it possible to have, or even increase, faith by studying science and its marvelous discoveries?

My earliest conflict arose around my freshman year of high school. I first encountered evolution there and at the age of fifteen, I could not find a way to accommodate the truths of both evolution and Christianity. I possessed passion in both fields and knew that I could not lose either of them. Freshman biology became my most

loved and also most stressful course of my high school tenure. Because of my immaturity in both biology, more specifically evolution, and my faith, I chose to put the most recently introduced information in the back of my mind. Over the years, I learned to distance myself from knowledge that clashed with my faith. In most instances, I did not put much effort into understanding new materials that conflicted with my faith, but instead I remembered them briefly, did well on exams and then stored them away. I stored dangerous knowledge like this in what can be referred to as the "forbidden zone" of my mind. By the time I reached high school biology I had mastered remembering the conflicting information and immediately storing it in my "forbidden zone" without exposing it to my faith. Throughout high school, the "forbidden zone" served as the temporary home for information that I needed for academic success but clashed with the beliefs I had been taught since a toddler. Although it was apparent to me that my academic strengths lay in the field of science, I did not want the burden of maintaining my "forbidden zone" out of fear that I would lose control of it. As imagined, it grew nearly impossible to exclude such factual concepts that biologists presented. Not until my freshman year at the University of Mississippi, did my Honors 102 professor introduce me to the idea that it is possible to be a Christian and still believe in the discoveries of evolution. Although I am still discovering the compatibility of my two passions, I found it embarrassing that I almost let my fear of something that I did not fully understand hinder me from pursuing my interests.

As my years of college progressed, I enrolled in more and more courses that taught me even more details about evolution. I soon began to realize that the more I learned, the less conflict I had with my religious beliefs. I became aware that I would be

settling for less my entire life if I let a fear of losing my faith stop me from pursuing my passion of science. Rather than completely abandoning my faith like some extreme authors such as Richard Dawkins suggests, I began to build my own bridges that allowed me to connect my religious beliefs with what science taught me. I realized that I did not have to interpret the Bible in the same fashion as all the members of my sometimes overly traditional church. I started forming my own interpretations of the Bible and its claims of Creation. I reasoned my faith in the truth of the Bible in ways that made science only strengthen the claims of the sacred book. It all began to make sense to me. Science does not threaten my faith. Instead, it explains my faith. With this sudden revelation and increased confidence, I wanted to share my findings with others, specifically my grandmother and other members of my church. As assured as I became that I could obtain my aspirations, absolutely nothing could prepare me for the task at hand.

The gap between some branches of Christianity and evolution is one that is causing harm among us all. Because of the threatening aura that evolution seems to present, Christians like my grandmother feel that it is harmful to humans as a species. She feels that it is a theory that has the purpose of disproving God. She and other elders of my church, thanks to philosophers like Dawkins, feel that evolution is an *alternative* to faith rather than an *assurance* of our faith. Many scientists feel that such evidence should not be ignored because the Bible, a fairly recent book when compared to the age of the natural world, says otherwise. This is preventing our species from understanding the basics of the natural world that we live in and more importantly, creating an even larger gap for our future generations to overcome. These scientists feel that neglecting their

factual support is already a bad decision, and they grow concerned that those who are ignorant to evolution could have detrimental effects on current and future generations.

Although many within my church frown upon my honors project, the current controversy needs to be addressed. Science has made advancements in the understanding of the natural world that are simply undeniable. These theories such as the theory of evolution are basically accepted as fact by scientists, and they feel that the same should occur in all others no matter the religious background. However, according to Pew Research Center, roughly 31% of adults in the United States believe that humans have *not* gone through the process of evolution, but simply have always existed in our present forms (Funk 1). For me and for many scientists, there is concern that if science is not more accepted, our future generations are in danger of becoming anti-intellectual as well (Jeeves 126).

Now, as a mature Christian and also a believer of evolution, I boldly agree with the scientists' concerns for religious people to acknowledge the truth in evolution. Furthermore, as a result of being born and raised in southern Mississippi in a traditional Baptist home, I know the conflict that occurs when a Christian admires the art of science, particularly biology. I will elaborate from my own perspective.

One of my early goals with this research thesis was to be able to present the theory of evolution in a way that would make sense to a specific audience, the stereotypical elder generation of my church. These are the "holy and sanctified" people that never really had the chance to learn proper scientific concepts. Although most of this generation immediately rejects the scientists' theory of evolution, they are not really at fault. Most of them were informed of these ideas by word-of-mouth, and as a result, they

heard statements such as: "Humans came from monkeys." Considering their educational backgrounds, I want to be able to introduce the ideas of evolution in a manner that is factually accurate but also invites them into thinking about the theories that I am presenting. I aim to show them that the two subjects should not clash at all, but instead, one assures the other. By teaching evolution, ideally, the threat of the theory evolution will be eliminated, or at least reduced, in Christian churches that are similar to my own. More specifically, I intend to inform audiences similar to my church congregation that the gap that seemingly separates some expressions of Christianity from openly accepting the teachings of evolution is not as impossible to bridge as many think.

In addition to influencing my audience, another goal of my research will be dealing with different facets of Christianity and their perspectives of evolution. I identify as a Baptist, and although our beliefs get stereotyped a lot, most of them have a bit of truth to them. We tend to follow the Bible strictly while still interpreting its meanings for our own convenience. The same can be said for other denominations as well. I want to explore how some of the different branches of Christianity approach and understand evolution. This will also give me an opportunity to examine a part of the history of Christianity while also comparing it with the advancements of science. Specifically, I plan to further understand the history of the relationship between different "Christianities" (different expressions of Christianity) and evolution both before and after the influence of Charles Darwin.

In this thesis, a final goal will be to address some of the more extreme philosophers who are opposed to the coexistence of faith and evolution. In this particular case, I will analyze the extreme views of Richard Dawkins in his books *The Blind*

Watchmaker and *The God Delusion*. By focusing on Dawkins, it can be seen how to *not* address this current issue between the two paradigms. I will make an example out of his work by revealing solutions to his arguments that I have derived to support not only my belief in God, but also my agreement with evolution. It is essential, as a scientist, to be able to respectfully present the ideas about evolution. I realize that believing in God is not for everybody, but it is not a scientist's place to tell someone what they should believe or not believe.

Lastly, my ultimate goal will be to extend my help. I want to inform these audiences that it is indeed possible to cope with both of these theories and still maintain our faith. I hope to give my own theological views as an example so that they might clear up the confusion amongst the audiences. Hopefully, my own testimony could bridge the gap between science and Christianity for someone. Maybe it will encourage aspiring Christian biologists to tackle the two subjects with confidence, or reveal to a grandmother somewhere, that her grandson's faith is even stronger due to his scientific expansions. However it happens, I just want eyes to be opened and lives to be changed.

This thesis has been a priority of mine for the last three years and I feel that it is absolutely necessary for the current conditions that exist in some of the southern Christian churches but also for some of the anti-faith philosophers. Bridging the gap is only the beginning of the lifetime dedication I have made to enhance my faith and the faith of those around me by spreading some of my resolutions to such an ongoing controversy. At the conclusion of this work, I will be satisfied if it has helped someone, even if it is only one person, to find the mental and spiritual capacity to accept evolution and science as an affirmation of his or her faith.

Chapter One:

The Greatness of the Natural World

Being raised in a traditional Baptist Church, I have constantly been influenced by the people of my church, specifically the elders. And, because my college experiences have broadened my perception of many different topics, I have a perspective and experience different from my elders. I noticed that when I mention topics like evolution around the elders of my church, they immediately rebuke me. They began to boldly claim how inaccurate the teachings of science actually are. And, I gradually realized that most of their beliefs of evolution are simply false or either misinterpreted due to their lack of familiarity with science and how scientists describe their work. I realized that I wanted to be able to educate this audience on this topic in terms that can be understood from their perspectives.

What exactly is Evolution?

So what exactly is evolution? Ernst Mayr says in his book *What Evolution Is* that evolution is an explanation for the world because it reveals that the world is forever changing (Mayr 7). More specifically, I define evolution as the changing of gene frequencies and therefore phenotypes within populations over a period of time. Mayr agrees and says that evolution can be described as a series of changes that happen over time that affects an entire population with the result that sometimes a population does

better. Evolution is a theory in the scientific sense rather than fact; it has been based upon countless tested hypotheses and has yet to be disproven.

Mayr says, "Evolution is the most important concept in biology. There is not a single Why? question in biology that can be answered adequately without consideration of evolution" (Preface xiii). The importance of Darwin's contribution to biology cannot be emphasized enough, without it, nearly all of the progress that we have uncovered throughout the last two centuries would be nearly impossible.

Evolution, or change over time, became important in the early 19th Century. Although many had already begun to question the facts of nature, figuring out what exactly drives the natural world was and is still quite the mystery. Evolution has been alluded to many times by scientists such as Jean-Baptiste Lamarck, but it took the acknowledgment and detail of Charles Darwin in 1859, with separate, independent findings from Alfred Russell Wallace, to really present the natural theory in a fathomable context. Darwin outlines his findings and beliefs in his 1859 book, *On the Origin of Species*. We must acknowledge that his efforts were focused on natural selection rather than evolution considering that he only wrote "evolve" once in his entire book: the last page. When Darwin wrote of evolution, or more specifically natural selection, I wonder whether or not he knew that his theory would be arguably the sole foundation of all biological sciences known today in 2016.

Evolution is centered on finding logical, testable explanations to the natural phenomena that are found in everyday life (Mayr 5). Scientists such as Darwin began proposing evolution because the previous solutions presented by ancient philosophers

were outdated and honestly just absurd. The theory of evolution strives to explain the complexity of biology. The natural world is seemingly flawless but yet more complicated than the human mind could originally comprehend. Because of our premature conceptions of the natural world, early philosophers sought to explain our surroundings from simplistic viewpoints, a lot of them resulting in interference from a supernatural force. Darwin originally had these same religious beliefs but after a voyage on the H.M.S. Beagle, he discovered that the biological world is controlled by a natural, self-regulating, self-sustaining force: evolution.

Prior to Darwinian contributions, theology explained most of the natural world. Whether the age of the earth or the uniqueness of animals, theologians believed nature to be a product of a supernatural being. Before long, science had presented such undeniable evidence against biblical teachings like creationism in Genesis that scientists were no longer willing to cope with the contradicting matters. Scientists began to believe in an "evolving world," instead of the original constant world that theologians and philosophers once believed it to be (Mayr 7). The scientific view of the earth began to push out the original thoughts of Christianity to the side. By 1859, Darwin had presented the argument for evolution in such a way that many scientists even began to refute the Christian beliefs and sacred text.

Originally, many people were able to rebut the idea of evolution as simply a theory, but as our scientific knowledge expanded, so did the evidence for evolution. We have, over the years, tested the theory of evolution over and over, and each trial leads to a more concrete existence of evolution. As the years have progressed, evolution has become much more than an ideology. Dr. Stratton says, "It is both a paradigm (a world

view, a perspective and a set of ideas) as well as a theory (a framework for observations and experiments), based on many tested hypotheses" (Stratton Interview). To better understand this paradigm and theory, we shall look at two vital aspects of nature that make evolution possible.

Natural Selection

Natural selection and evolution are often interchanged and mistaken for synonyms. However, the two concepts are not remotely close to having the same meanings. Natural selection is the driving force that allows biologists to witness evolution. For example, if nature were a company, natural selection would be the workers that do all of the work to make that company great. Evolution would be a face for the company to rely on and advertise, but truly, natural selection is the centerpiece on this company. It is not the sole requirement of evolution, but it is the major contributor. Natural selection is such a vital process that Richard Dawkins dedicates an entire book to it entitled *The Blind Watchmaker*. His book is only one of the many that have been dedicated to explaining evolution through the lens of natural selection. However, is natural selection that important to evolution?

I define natural selection as the natural process that allows the most beneficial or advantageous factors (genes) of an organism within a population and specific environment to favor that organism which will ultimately increase its chances of survival and reproduction. Unlike evolution, natural selection acts on an organism rather than an entire population. Because of its survival and reproductive success, the chances of those favored genes, or small units of DNA that are translated to give an organism's physical

appearance, being passed on to future generations have increased. From the translated genes, the resulting physical appearance is the subject that natural selection manipulates.

Here's an example: giraffes. We go to zoos now and see giraffes, and their abnormally long necks do not appear abnormal at all. We see the giraffes and automatically expect them to possess long necks; however, evolution played a vital role. At some point in the past, natural selection had to have an outlet for the giraffe's neck to become long. How exactly did this happen?

Let us go back in time and imagine that there is a population of giraffes that have two possible neck types. One possibility is a short stout neck while the other is a long skinny neck. This population lives in a habitat where only tall trees are present, and therefore, the leaves of these tall trees are the only food source for these giraffes. The two different giraffes face two totally different circumstances. The short, stocky-neck giraffes are going to struggle to find food because they are not able to reach the leaves of the tall trees. On the other hand, the long, skinny-neck giraffe is able to easily access the leaves. In this scenario, the giraffes that have short necks will die. Because they are not able to reach the tall leaves, they are eventually going to die and probably never be able to reproduce. Since they cannot reproduce, the genes that code for their short, stocky necks are no longer present within the population and will not be for future generations either.

In contrast, the giraffes with long, skinny necks are able to thrive in this specific, tall-tree environment. Because they are eating without competition, these giraffes have become healthier and are continuing to survive when compared to the giraffes with short

necks. As a result of surviving, these giraffes are able to eventually reproduce to give rise to a new generation. Since the long necks are coded for by specific genes, the parental generation of long-neck giraffes passes on these genes to their offspring. Over time, these genes have become more and more prevalent until now every giraffe has long necks.

Thanks to Herbert Spencer, natural selection is associated with the term "survival of the fittest." The term refers to an organism's fitness, the ability to survive and reproduce. In nature, only organisms that possess the genes that are best suited for a specific environment will thrive, which means that these organisms have the highest fitness. The genes that are not ideally suited for the environment will soon be outcompeted by the better genes until they no longer exist within the population. Only the organisms with the highest fitness survive, which explains Spencer's phrase the nature is the true essence of "survival of the fittest." Scientists argue this is why we see such complex life forms on Earth. Natural selection is arguably the most powerful forces that exist in nature and is the foundation for evolution.

Although we have discussed, in an overly simplified example, how natural selection works, we have yet to discuss how the varying gene types (and phenotypes) that natural selection acts on actually occur. How did their ever become a gene for a "long neck"? The answer is simple: mutations.

Genetic Variation

Evolution's relationship with natural selection is a necessity for evolution to exist. However, natural selection is not the end of this chain of requirements. Natural selection

is the force that drives evolution, but it is not able to perform its magnificence within nature. The process of evolution also needs genetic variation. Variation comes in many ways, but most commonly results from mutations, gene flow, and the process of sexual reproduction. Without this variation, it would take the world an unthinkable amount of time to reach the perfection that we witness today.

When I say "mutations," I am not referring to the wild, extreme mutations that Stan Lee writes about in his Marvel Comics. The mutations that I am referring to are the small, but random, changes in an organism's DNA that ultimately affect phenotypes either in a positive or negative manner. These mutations can lead to functions of the organism being lost, or they can also result in organisms gaining functions (like Wolverine's "claws" in X-men). When these random mutations encounter unique environments, then natural selection is able to weed out what it deems as beneficial and what it deems as unnecessary.

To better understand the power and necessity of mutations, let us further examine the example of the giraffes. In this case, we have one population of giraffes; all of them have short stocky necks. At this point, they all have equal chances of surviving even within an environment with tall trees. However, if two of these short-neck giraffes mated and, in their offspring, a mutation occurred, then the chances of survival may be altered. If the mutation is beneficial, for example making the offspring's neck longer, then the offspring has increased chances of surviving. His chances of surviving increase because he has less competition when trying to find food, ultimately increasing his chances of mating successfully. With successful reproduction, the mutated giraffe can now pass on its mutation to his offspring. His offspring will continue to pass on the genes until the

mutated trait has become the majority of the population. Natural selection has deemed this mutation a beneficial one and the result is a shift in the frequency of the mutation within the population.

In contrast, the mutation could lead to a complete opposite result. If the two short-neck giraffes were to mate and their offspring had a mutation, it does not always have to be beneficial. Imagine that the offspring's mutation that previously led to a longer neck is now a mutation that results in an even shorter neck. The chances of surviving in the population are still now unequal, but in this case, the mutated offspring has a decreased chance of survival. He is going to be outcompeted within the population because he is at a disadvantage when trying to obtain food. Eventually, he will starve and not survive long enough to reproduce. Because he cannot reproduce, his mutations for the shorter neck cannot be passed on to future generations. Again, natural selection has eliminated the unnecessary, and in this case, detrimental genes.

Another contributor of genetic variation that benefits evolution is gene flow. Gene flow is the process of genes being shifted around from different populations due to migration of organisms. For example, there are two different populations of the same species: population A and population B. In gene flow, because an individual from population A may possess slightly different variations to this same gene that is found in Population B, if an organism from population A migrates to population B, the latter population's genetic variation has just increased. By introducing a new variant to a gene to population B, another possible phenotype has been introduced. The new variation gives rise to another opportunity for natural section to have its way in nature, ultimately contributing to the ongoing process of evolution.

One of the final sources of genetic variation that we find in living organisms is unique to sexual reproducing organisms. In the process of sexual reproduction, many opportunities exist where genetic variation can occur, almost all in meiosis. For example, in meiosis, the process of making haploid cells, crossing-over is an early step within sexual reproduction that produces variation. Crossing-over occurs when an organism's cells are preparing to divide into haploid cells and the chromosomes align in pairs so that they can separate. When paired, the two different chromosomes sometimes swap pieces of DNA and give each chromosome possible new variants to certain genes. This allows for new combinations of genes to be found within individual chromosomes.

Meiosis also produces another channel of variation: independent assortment. This occurs when all of the duplication has been completed and the cell's chromosomes are now ready to separate into new haploid cells. Let's take human cells for example. Ideally, our diploid cells have 23 pairs of chromosomes. Each pair consists of one copy from our mother and one from our father. In meiosis, when the new haploid cells are beginning to form, independent assortment means that the new cells will receive random combinations of the 23 chromosomes, creating new combinations and also new variation.

Genetic variation is an important piece to the process of evolution. Although I only named a few, genetic variation exists in many other forms as well. All of them provide valuable unique input to natural selection as well as evolution. By genetic variation working together with natural selection, evolution has allowed for our natural world to become what seems as this perfect existence. They have provided the complexity in everything that we see. Although it does not get as much credit as natural

selection, genetic variation and natural selection have the power to positively alter generations to come.

Common concerns from My Church Elders

Considering their lack of knowledge in evolution, I commonly find myself debating and answering misguided questions from my church elders. One of the questions that almost always occurs is, "How can evolution be true if it says that humans came from apes?" This question does not shock me because I, too, once believed that evolution meant that we came from apes. When first presented, the theory of evolution can appear to sound as if we are a product of apes. However, that is not the case. Evolution only relates humans to apes in one way: ancestry. It says that the human species and apes shared a common ancestor at some point in our history. This is not and should not be in conflict with a Christian's beliefs. Nowhere in the Bible does it say that God is not capable of being the "common ancestor." As a Christian, we believe that God created all life, and therefore, he created both apes and humans. Is that not an opportunity for us, as Christians, to expand our limitations that we have put on God?

Another concern that the elders have mentioned to me deals with God directly. They have mentioned that the theory of evolution contradicts their belief that God created all life. The elders have made the argument that evolution seems to intend to disprove God and His involvement within the natural world. Honestly, authors like Richard Dawkins do appear to set out with this agenda of belittling people who have faith in God. However, that is not the case with most supporters of evolution. Dawkins is the minority. Most believers in evolution that are not religious, are still not concerned with someone

else's personal beliefs. It only becomes an issue when some religious people feel that evolution contradicts the ability of God. The theory of evolution does not obligate one to choose one or the other. God and evolution can both exist and their coexistence does not discredit God's involvement.

A final question that I commonly receive from the elders at my church deals with the vast diversity of life on earth. They might ask, "How can the large variety of organisms be explained?" For questions like this, the answer is simple. The combination of natural selection and mutations provide all the evidence for the immense speciation that we observe today. Through a series of mutations through generations, speciation occurs rather regularly. This does not mean that God has nothing to do with the variety of organisms that we see. Natural selection and mutation just provide a possible explanation as to how God diversified the life on Earth. Like many scientific processes, the variety that we see only makes the work of God seem more marvelous and therefore should not be a concern to a person of faith.

Overall, questions and concerns are not abnormal to have. Whether they are aimed at God or at science, questions will always be there. However, I have challenged myself to not avoid controversial questions, but instead to find way that the questions could possibly be answered according to my faith. Now I extend this challenge to those who also have questions raising concerns about the existence of God and the validity of evolution. One can find his own answers if he's open to try.

Chapter Two:

What Was the Church's Original Response to Darwin?

Presently, the conflict between some conservative Christian traditions and evolution seems to be central. However, evolution has *not* always been the primary concern. In this chapter, we will examine the history of the Christian churches and their reactions to science in general, but specifically to Darwin's thoughts.

Pre-Darwinian Christian Concerns with Science

The dispute between religious beliefs and scientific findings did not start with Darwin. Sir Francis Bacon, in the late 16th and early 17th centuries, started what we now refer to as the "Scientific Revolution." According to a Rosch, Bacon thought that "true knowledge could only be obtained by inductive reasoning based on objective experimentation rather than anecdotal reports" (Rosch 1). Bacon explained how he felt that God empowered man with the ability to find and understand this higher reasoning, but ultimately, he opposed "the blind and immoderate zeal of religion" (Rosch 1). Although Bacon may have named this era, he did not start the dispute between science and some forms of Christianity.

Copernicus, working in the early 16th century, was a Polish Catholic Church Official who studied astronomy with a goal of creating a more exact calendar. He

produced major works like *De Revolutionibus* that attempted to accurately date Easter. As a result, Copernicus ultimately presented the Copernican system, which explained that the Earth did not center the Universe, but instead, the sun did. Originally, the Catholic Church minimally accepted the Copernican system, but in 1615, the Catholic Church began to disapprove of Copernicus' theory. In attempt to restrain the Copernican theory, the Catholic Church banned the book from being available to the public.

Working almost 100 years later, Galileo (1564-1642) began to also cause trouble within the Catholic Church. Many Catholics shunned Galileo. Richard Olsen even refers to Galileo's dispute with the Catholic Church as "the most famous case in the history of science and its interactions with religion" (Olsen 1). This case is the most famous because it sheds light on the overwhelming power that the Catholic Church had over the minds of people in society no matter if they possessed faith or not. According to Olsen, in 1633 Galileo faced charges that had been brought on him by "the Holy Office of Inquisition for vehement suspicion of heresy in connection with his support of the Copernican sun-centered system of astronomy" (Olsen 7). Although Galileo provides the most famous case of conflict, Copernicus also deserves credit.

To understand the severity of Galileo's case, we must understand the true power that existed within the Catholic Church. The Catholic Church not only controlled the church, but also the government as well as the mindsets that existed within the philosophy of science. It is believed that astronomers of this age were expected to explore only the heavens, and hypothesize about its existence. Many Catholic leaders frowned upon exploring astronomy in the physical sense which is why, originally, Copernicus only offered his theory hesitantly. The Catholic Church leaders had so much

power that they even issued a decree in 1546 banning anyone outside of the church officials from producing their own interpretations of scripture (Olsen 13).

In 2014, Daniel Spelda reflected upon the significant effect that the Catholic Church Fathers had on the discoveries of science and more specifically astronomy. He recalls that many of the early scientists felt the need to reveal their discoveries in ways that seems useful and obedient to theological perceptions. Spelda argues that at one point in time, the "moral evaluation" of knowledge had to be deemed useful by the church rather than scientists. He writes, "In the evaluation of theoretical knowledge, the idea often emerged among the Greek philosophers that knowledge was fully legitimate only if it could prove its importance for moral perfection, for achieving salvation or for the common good" (Spelda 26). Overall, Spelda says that the Church Fathers had three main concerns for the contributions of science. The first of those concerns deals with the pointlessness of knowledge that does not enhance a person's chance of obtaining Salvation. Spelda calls their second concern a "desire for knowledge which is inappropriate for man and is reserved for God alone" (Spelda 26). The final concern of the Church Fathers dealt with the fact that humans are arrogant enough to try and restrain God's supremacy. Overall, the Catholic Church officials had power over both the church and state, including the minds of scientists, and Galileo realized this.

In conclusion, in 1615, Galileo officially sparked the conflict between his philosophy and the Catholic Church. Olsen writes, "Galileo explicitly argued that Scripture could and should be interpreted as consistent with Copernican theory rather than with an earth-centered cosmology" (Olsen 14). As soon as this claim surfaced, Father Caccini, a Dominican official, reported Galileo and his supporters to the Holy

Office of Rome, claiming that Galileo presented ideas that did not align with the teachings of the Church Fathers (Olsen 14). Overall, Caccini's claims resulted in minimal effects, but when Galileo wrote Dialogue Concerning the Two Chief World Systems in 1632, Pope, Urban VIII sought to arrest Galileo for the claims that he made in support of the Copernican system. Eventually the case settled with Galileo agreeing to be on permanent house arrest for the remainder of his life. Although Galileo's case took place more than two centuries prior to Darwin, it ultimately set the tone for the controversy that science continues to present to some beliefs of Christianities.

Although Copernicus and Galileo were some of the earliest scientists to raise the Church's concerns with science, they marked only the beginning. We must now fast forward more than 200 years to Charles Darwin and his 1859 *On the Origin of Species.* Although much other scientific advancement took place over that 200 year span, the most controversy resurfaced with Darwin's contributions to science.

The Response to Darwin

Charles Darwin published *On the Origin of Species by Means of Natural Selection, or Preservation of Favoured Races int he Struggle for Life* on November 24, 1859 following a joint presentation to the Linnaean Society with Alfred Russell Wallace the previous year. He published the book in London, and only 1250 copies were released. All 1250 copies sold out immediately. When Charles Darwin released his book *Origin of Species*, it does not come as a surprise that the book shocked many religious people. They

heard of Darwin's work and honestly, did not know what to do with it. The immediate responses varied according to faith.

Because Darwin published in London, England, the Anglican Church immediately had access to *Origin of Species*. Many of the liberal Anglicans somewhat supported Darwin's discoveries, others existed that did not support him. Samuel Wilberforce, a Bishop from Oxford, opposed Darwin's work and openly argued against it in 1860 at the British Association for the Advancement of Science. He argued with Thomas Huxley on whether or not Darwin's work was credible. Wilberforce, representing the conservative Anglicans, pointed out to Huxley that if Darwin were correct, then Huxley's ancestors would have to have been monkeys. This thought occurred consistently in the minds of many Anglicans regarding *On the Origin*.

With respect to the Catholic Church, only the Vatican, or the governing leaders of the Catholic Church, had the power to respond to Darwin's remarks. At the beginning, the leaders of the Catholic Church acted cautiously out of fear of embarrassment. According to Blancke, rather than acting irrationally, the Vatican "resorted to a more 'pragmatic policy,' dealing with evolutionary ideas and writings on a case-to-case basis" (Blancke 355). Although the Vatican did not specifically tell Catholics to completely avoid evolution, it did warn them to proceed in the scientific field with caution.

And, although the Vatican voiced their opinions on evolution, the Catholic people did not always agree with them. When first introduced, Darwin's ideas intimidated the Catholics. Blancke writes that for the first two decades after Darwin released the book, "They were primarily concerned with the idea that humans had evolved from a simian

ancestor through a purely natural process, called natural selection" (Blancke 359-360). They felt that evolution's explanation for the creation of man contradicted their religious belief for man's origin. For nearly twenty years after Darwin's book, Catholics rejected his theory and natural selection specifically. However, due to the Vatican's reluctance to issue a stance on the matter publically, the Catholic people were able to grow to appreciate evolution's principles.

The Vatican deemed evolution to be problematic not because the theory of evolution directly contradicted the "literal interpretation of the Bible" but more because evolution went against what the book of Genesis had to say about the origin of man (Catholic Responses 356). They refused to believe that man did not have a divine origin and that woman had come from man. However, Blancke writes that some of the Catholic intellectuals in the 1920's "proposed that the first man's body could have been somehow prepared though an evolutionary process that was guided by God" (Catholic Responses 356). Even this raised concern for the Vatican.

The Vatican also kept its distance from evolution because it was highly associated with atheism. Some Catholics chose to try to balance both, but ultimately the Vatican thought that it was directly against their belief system. Overall, the Vatican felt threatened by evolution and its atheist supporters, but never actually drafted an official response to the theory prior to 1950.

Catholicism's response to Darwin's theory also depended on the manners in which biologists presented it. As John Tyndall proved in 1874, when theorists presented evolution and natural selection with emphasis on the "anti-religious implications,"

Catholics hesitated and even retaliated against this controversial presentation because they felt threatened. However, when scientists present evolution in a Catholic-friendly way, the Catholics met it with much less opposition. Even if they did not receive the theory immediately, they did not immediately reject the theory which ultimately gave them a better chance of one day accepting it.

Today, Catholics have eased most of their tension with modern evolutionary theory. In 2008, Pope Benedict XVI said that evolution and Catholic faith do not contradict one another; it must be noted that he still did not openly support evolution either. Blancke even reports that, even in 2008, some leaders of the Catholic Church like Cardinal Schönburn still had their disbeliefs about evolutionary theory. He claimed that the theory still possessed gaps within the information. Although some aspects of evolution still raise questions within the Catholic Church, over the last century and a half, the controversy has decreased in the community.

As a whole, Catholicism had varying opinions when Darwin initially introduced his theory, but after almost a century, the Vatican finally stepped forward with a more unified response to evolution. Not until 1996 did the Vatican, through Pope John Paul II's report to the Pontifical Academy of Sciences, declare that evolution was "more than a hypothesis" (Catholic Responses 367). Blancke writes, "The address was hailed widely as the definite statement of the acceptance of evolution by the Catholic world" (Catholic Responses 367). Although 140 years after Darwin's *Origin of Species*, the Catholics finally accepted evolution as a factual theory.

The Protestants responded more diversely. Many of the Protestants initially thought that Darwin's new contributions provided eye-opening revelations of God's masterful creations. Charles Kingsley, an Anglican parson and Christian "wrote to Darwin telling him that although the theory meant that he must give up many of the things that he believed, it was 'just as noticeable a conception of Deity, to believe that He created primal forms capable of self-development'" (Ruse 356). Others like the archbishop of Canterbury Frederick Temple felt as if the new scientific discoveries simply made God's "nobility" more obvious (Ruse 356). As far as evolution, Hjermitslev says that many Protestants viewed "evolution as a meaningful process and the unfolding of the Creator's plan" (Hjermitslev 281).

However, not all Protestants openly accepted these new claims. Some Protestants, like Anglican Wilberforce, argued that Darwin's ideas were "unsound" in theory. He announced this at the British Association for the Advancement of Science meeting in 1860. Of these initial responses, many theologians produced written rebuttals in Darwin's direction. Anglican rector Francis Orpen Morris wrote *Difficulties in Darwinism* (1869) and *The Demands of Darwinism on Credulity* (1890) arguing that Darwin "deserved only utter contempt and derision" (Ruse 357). In 1874, Charles Hodge, a theologian from Princeton wrote *What is Darwinism?* where he answered it to be purely atheism (Ruse 357). Hjermitslev claims that, although many Protestants could accept the idea that God made the natural world through ways of evolution, they could not come to embrace the role of natural selection.

Hjermitslev briefly notes that the relationship between science and religion in English speaking countries favored liberalism and the acceptance of evolution within

their faiths, but he says this did not take place in Denmark. He writes that the Seventh Day Adventists had influence from the young-Earth creationists and therefore, they hesitated to believe in evolution. While the Adventists did not eagerly embrace evolution, moderate Quakers shifted toward looser interpretations of the Bible and generally accepted of evolution. Overall, his work focused on Grundtvigians who followed the theological interpretations of N. F. S. Grundtvig. Early in their exposure to evolution and Darwin, they rejected the theories. Grundtvig felt that "reason" would not draw people to Christ. However, as time progressed, some Grundtvigians began to tolerate evolution.

Well into the 20th century, one of the major concerns of many Protestants had to do with evolution being implemented into education. One of the first major altercations between evolutionary theory and Protestants arose in Dayton, Tennessee in 1925. Many Protestants chose to attack evolution by ways of education. In 1925, a school teacher, John Scopes presented a case against the newly issued anti-evolution laws that many states, including Tennessee, had established (Dixon 25). The Scopes argument sparked a heated debate between Protestants, especially Fundamentalists, led by Presbyterian William Jennings Bryan, and believers of evolution. It resulted in a continued number of anti-evolution laws being validated in numerous states. However, in the 1960's and 1970's the Supreme Court deemed the anti-evolution laws unconstitutional. The Protestants immediately rejected this ruling and decided that if Darwinian Theory were to be mandated in public schools then Creationist Theory should be equally implemented (Dixon 26). Today, because schools teach evolution, some Protestants (Fundamentalists) still oppose the theory evolution overall. As Ruse mentions though, amongst a great deal

of Protestants (so called Modernists) view evolution as a way to explain the natural phenomena of God.

In conclusion, Michael Ruse categorizes most Protestants as being willing to embrace evolution without abandoning their faiths. Ruse writes, "The majority found ways accommodating their theology to more or less revised versions of evolution" (Ruse 358). G. F.Wright and theologian James Orr, two of the many to help pioneer Fundamentalism, both wrote of their advocating of evolution. Others like B. B. Warfield supported evolution as well. Although Warfield claims to be a Calvinist, he referred to himself as a "Darwinian of the purest water" because of his experiences with animal breeding and the many forms of inherited variation. (Ruse 358).

What Were the Baptists' Thoughts on Evolution?

In 1859 when Darwin went public with his discovery of natural selection, many of the Baptists lacked an immediate response. Considering that the Baptist denomination has only existed for roughly 400 years, the denomination has not targeted much of their concerns towards the advancements of science until recently. According to Leon McBeth, Baptists derived from England in the early 17th century. McBeth writes, "They apparently emerged out of the Puritan-Separatist movement in the Church of England" (Baptist History 1). Known for their devotion to baptizing ones who professed their beliefs aloud, they were nicknamed the "Baptists."

Although the 20th century witnessed many bizarre responses from this denomination, one of the earliest vocalizations of their stance with evolution and biblical

interpretations occurred in evolution in 1960. Ralph Elliot, a professor of Midwestern Seminary, proved to be one of the early examples of someone who experienced the radicalness of the Southern Baptists Convention. In 1961, Elliot released his book The Message of Genesis, which ultimately questioned the historical validity of the book of Genesis, more specifically, the first 11 chapters. Immediately, Baptists criticized Elliot for his work and having the audacity to share it. Initially, the Midwestern administration issued a supporting statement for their professor calling him a "consecrated Christian" and a "promising scholar" (Faught 1). Elliot also received supporting statements from groups such as the Sunday School Board telling Broadman Press to continue publishing Elliot's book. In 1962 at the Southern Baptist Convention, heated debates occurred between the members regarding Elliot and his book. Although many members pleaded that Elliot's book be banned altogether, the overall result consisted of restoring the authoritative power to the Bible and also the discontinuation to more publications of Elliot's work. Elliot compromised with the leaders of the convention on their renewed theology, but he would not submit to their discontinuation of his book. This ultimately led to Elliot being dismissed from Midwestern Seminary. Although Elliot left the institution, the ongoing controversy within the Baptist community continued.

A few years later in 1969, G. Henton Davies released commentaries to Genesis through Broadman Press known as the Broadman Bible Commentary (Genesis Volume). In his commentary, he refers to many people within the Bible as mythological characters rather than factual beings, most notably Adam and Eve. In his commentary, according to Jon Walker, Davies "suggested Abraham misunderstood and that God did not give the command to sacrifice Isaac" (Walker 1). Many members of the Southern Baptist

Convention, like Elliot, rejected Davies' teachings. Ultimately, they requested that the Sunday School Board remove Davies' commentaries, and they did not republish until the commentaries had been rewritten and updated in 1970.

As mentioned earlier, the Baptists are a relatively young denomination and their stance on evolution is even younger. Unlike Catholics and some Anglican groups, Baptists had no initial response to Charles Darwin and his *On the Origin of Species*. In fact, aside from their involvement with Elliot and Davies, they did not even issue a full statement regarding evolution specifically until even later in the 20th century. For example, the Southern Baptists issued a resolution in 1982 that rejected the teachings of evolution, especially in public schools. They proposed that if schools taught evolution, then "scientific creation" should be taught as well. In this sense, "scientific creation" refers to the approach of teaching creation, as in the Bible, can be presented in scientific ways with no acknowledgement of Godly interference. In their 1982 Resolution on Scientific Creationism, they made claims pertaining to both evolution and creationism. In their resolution, they wrote, "The theory of evolution has never been proven to be a scientific fact…" (Shurden 74). Their resolution requested that all schools teach all possible solutions to the origin of life and not simply Darwin's evolution.

In this particular case, the Baptist relationship with evolution appears to be quite ironic. Here I am, a Baptist in the 21st century battling two ideologies that have raised hell internally, while the two just recently became controversial. Compared to Catholicism and other Protestant faiths, the Baptists have only had around 30 years of issues with science. The immaturity of the Baptist concerns with evolution also infers that claim that I mentioned in a previous chapter that many people who so strongly object

to evolution results from a lack of understanding. If we assume that the Baptists are just now being educated on the matter of evolution, then this explains the bold relatively recent rejections to the theory. Even the Catholics took more than a century to collectively come to terms with evolution. This allows me to be hopeful that the Baptists will someday as well.

Chapter Three:

Philosophy of Christianity and Evolution

Although we would like to believe that, as humans, our intentions mean well, this is not always the case. Two philosophers, Richard Dawkins and Michael Ruse have chosen to directly confront the conflict between their understanding of Christianity and their understanding of evolution. I feel their perspectives are interesting, but it is often in disdain. In this chapter, I will address some of their concerns first as a student of science and second as a person of faith.

The Blind Watchmaker

In Richard Dawkins' *The Blind Watchmaker,* Dawkins presents arguments in support of the claim that no necessity for a God exists when science can explain all of the natural phenomena that occur on this planet. To introduce his claim for a lack of the necessity for a God, Dawkins refutes statements presented by William Paley, a late 18th to early 19th century Christian philosopher and author of *Natural Theology or Evidences of the Existence and Attributes of the Deity*:

> In crossing a heath, suppose I pitched my foot against a *stone*, and were asked how the stone came to be there: I might possibly answer, that, for any thing I knew to the contrary, it had lain there forever; nor would it perhaps be very easy to show the absurdity of this answer. But suppose I had found a *watch* upon the ground, and it should be inquired how the watch happened to be in that place; I should hardly think of the answer

> which I had before given, that, for any thing I knew, the watch might have always been there. (Blind Watchmaker 4)

Paley argued that there was, indeed, a need for a god. He emphasized that the watch was far too delicate and complex to have always been there like the rock. He concludes that there must have been a watchmaker. Paley says, "…There must have existed at some time, and at some place or other, an artificer or artificers, who formed it for the purpose… and designed its use" (Blind Watchmaker 4). Ultimately Paley compares the watch with nature. Nature possesses similar complexity and elegance as the watch, and, just like the watch, nature depends on a designer as well.

Dawkins agrees with Paley that nature is profoundly intricate and especially complicated, and he also agrees that, because of this, it requires a designer. The sole difference lies in that Paley refers to his designer of nature as supernatural while Dawkins' calls the designer of nature a more tangible and pragmatic source. For Christians like the elders of my church, Paley's designer is our God. For Dawkins, the designer is natural selection. Dawkins says that the comparison of the watch and nature lacks precision. According to Dawkins, a watchmaker sets out with a plan and purpose for the watch. He writes, "He designs his cogs and springs, and plans their interconnections, with a future purpose in mind's eye" (Blind Watchmaker 5). He argues the difference between the watchmaker and his theory of natural selection is that natural selection works blindly and unintentionally, creating the complexity of nature. Dawkins concludes of natural selection, "It has no vision, no foresight, no sight at all. If it can be said to play the role of the watchmaker in nature, it is the *blind* watchmaker" (Blind Watchmaker 5).

Dawkins introduces a valid point in my opinion; however, I feel that he is mistakenly interchanging "blind" with "purposeless". To clarify, I agree with Dawkins that natural selection is blind, but I do not believe that natural selection is the only power working here. Because natural selection is blind, we would still expect complex life forms, but these life forms should not possess a sense of purpose. I agree that natural selection allows us to observe the intricate life forms that exist today, but natural selection cannot be as blind as he believes because there is reason to believe that nature can have purpose. For example, the human species possesses individual purposes. Whether it is to worship God or to annihilate any credibility to religious beliefs, our species has purpose. If natural selection is blind and unintentional, then where does our purpose come from? Natural selection may enhance an individual's chance at surviving and reproducing, but it cannot give it purpose. Purpose can only be derived from a supernatural force, and in this case, I believe that force to be God.

Although natural selection stands as a natural process, it still produces the complex living organisms that Paley argues need to be designed. To Dawkins, Paley deemphasizes natural selection's role in the complexity of nature. He writes:

> Natural selection is the blind watchmaker, blind because it does not see ahead, does not plan consequences, has no purpose in view. Yet the living results of natural selection overwhelmingly impress us with the appearance of design as if by a master watchmaker, impress us with the illusion of design and planning. (Blind Watchmaker 21)

Dawkins argues that we tend to forget the perfections that natural selection has produced. Because it's a natural process and produces such flawless living organisms and their features, Paley discredits natural selection as the overseer. Dawkins claims that Christians overly-simplify and assume that anything complex must be a result of a divine designer and are oblivious to the facts of scientific processes such as natural selection. He clears this claim up with the example of echolocation.

Dawkins references the similarities of bats' echolocation and engineering techniques such as radars. In the beginning, engineers encountered difficulties to create such a complicated radar design that had the ability to help them navigate areas that could not be seen. Because some humans tend to think that our species is the most intellectually gifted species on this planet, it baffles them that the same radar techniques have occurred naturally in bats, a species that we consider inferior to ours. Dawkins acknowledges that bats had perfected this complicated design through natural processes, such as natural selection, and without them purposely attempting to create it. What's fascinating about bats is that they derived this mechanism without the use of complex mathematical equations.

He emphasizes the bats' lack of effort to perfect echolocation to belittle our assumptions that echolocation is such a complicated technique. For the bats, it simply occurs. They did not have to logistically plan how and why it is successful. Echolocation in bats is an obvious example where natural selection has provided, naturally, a complicated feature in a living organism that originally would seem to need a designer. Overall, this reveals the true power of evolution. Evolution did not require bats to derive a system of equations for echolocation. This complex system came about solely because

of natural selection and by scientists also but separately figuring out echolocation, we can observe just how complex evolution allows nature to become.

From a scientific view, echolocation occurs naturally in bats while our species has artificially created it. As a biologist, bats having echolocations does not baffle me because we must put into perspective how this unique ability came about in their genus. Echolocation remains a complex technique, but natural selection has been able to piece together all the necessary pieces to allow bats to function with it properly. Echolocation did not spontaneously occur, but instead, allowed natural selection to inch closer and closer to perfection with each generational turnover. According to Cochise College, bats have had more than 50 million years to inch towards a perfected echolocation technique (Turcotte 1).

In contrast, a Christian like the elders of my church may not be able to readily deem echolocation as possible through natural selection. For instance, if an engineer attempted to teach one of the elders how scientists arrived at their radar techniques, it would probably go over their heads, as would it go over mine. However, the issue lies in the fact that they would mistake the difficulty of echolocation with the necessity of a designer. The typical elder of my church may not understand natural selection's ability to form complex features within a species. Attempting to fathom 50 million years may also affect a conservative Christian's belief in natural selection's capability. Not many people have seen 50 million of anything. For humans, we have done great if we live to see 80 years of age. That seems like a lot of time to them and they must consider that 50 million years is so much time that we cannot scale the two periods. Since they lack the ability gauge how long 50 million years actually measures, they misinterpret how much

time natural selection is given to result in something like echolocation. Because of their lack of belief in natural selection and their lack of comprehension of large amounts of time, they revert to solely feeling that God is the only explanation for echolocation's occurrence.

Again, Dawkins provides solid a supporting example for his designer being natural selection; however, this example does not disprove the existence of a God. He feels that natural selection's undeniable power invalidates the power of God, but some Christians, like myself, argue that it does not disprove God. Instead, it makes Him more admirable. He instilled in bats, through natural selection, the mechanisms of echolocation; because we reconstructed echolocation for our own radars, we can now marvel at the perfection that God allowed natural selection to create.

Natural selection provides the driving force of evolution and Dawkins reveals two possible modes of selection in his book. According to Dawkins, natural selection has two different types of selection that could possibly exist that to act on these mutations: single-step selection and cumulative selection. To understand cumulative selection, we must first understand Dawkins' "single-step selection." Single selection describes an instance where a mutation occurs and is declared as beneficial, neutral or harmful. However, it is not recorded and passed on to the next generation. We must also note that if a mutation is going to be passed on, then it must first be present in the germ line cells, or the hereditary cell types within the body. Dawkins emphasizes that single selection would take about "a million million million million million years" to reach the life forms that we observe naturally today (Blind Watchmaker 49). With this mode of selection, the mutations are pointless in each generation because these mutations are not going to be

seen in future generations. He writes, “If evolutionary progress had to rely on single-step selection, it would never have got anywhere” (Blind Watchmaker 49). In contrast to single-step selection, Dawkins explains that the living organisms existing on our planet presently result from what he expresses as cumulative selection. Cumulative selection reckons that each random mutation that occurs, if beneficial to reproductive success, is passed on to the next generation and serves as the new base line for evolution act upon. Dawkins feels that cumulative selection brought us where we are now, and I agree. He argues that the existence of cumulative selection weakens the argument of “chance” being the cause rather than Darwin’s natural selection. He says that, “Chance is a minor ingredient in the Darwinian recipe, but the most important ingredient is cumulative selection which is quintessentially nonrandom” (Blind Watchmaker 49).

Biology tells us that natural selection does indeed work in a similar fashion to Dawkins’ cumulative selection. When mutations occur, the genes that are beneficial to an organism’s reproductive and survival success are, in a way, saved into the organism’s genome. From there, the organism passes these genes on to future generations. What makes Dawkins’ cumulative selection fairly accurate is the idea that those future generations can also add their own mutations that occur to the ones that they previously inherited. The new combinations could ultimately have varied effects on subsequent generations. Dawkins’ cumulative selection can ultimately result in the complex features that different species possess such as bats’ echolocation.

From religious viewpoint, Dawkins’ cumulative selection may not be as controversial because many non-scientists might struggle with understanding such a complex idea. Once they do understand, I do not believe that they would see it as

threatening because it does not directly conflict with the existence of God. Many elders of my church choose to ignore scientific topics that are not harmful to their beliefs. In this case, cumulative selection does not threaten their relationship with God, and therefore, they will do not feel a necessity to care much about it. Personally, the presentation of cumulative selection should only further a person's understanding of how natural selection would enable life to arrive at such complexities as seen through Dawkins' echolocation example.

Dawkins emphasizes how some Christians misunderstand natural selection. Typically, they only recognized natural selection for removing genotypes, or genetics, or an organism that result in non-advantageous phenotypes, or physical appearances. He wants us to acknowledge the constructive facet of natural selection. He writes, "People sometimes think that natural selection is a purely negative force, capable of weeding out freaks and failures, but not capable of building up complexity, beauty and efficiency of design" (Blind Watchmaker 169). Although natural selection does occasionally result in some of the less competitive genes being removed, Dawkins is right. Natural selection causes the best genes to be passed on to future generations. These genes will be the genes that ultimately fit best within an environment. Through natural selection, organisms accumulate all of the genes that are most suitable for them within their specific niches. When accumulation occurs, complexity follows as Dawkins says. Some Christians readily label complexity as being divinely created while Dawkins argues that this occurs solely from natural selection.

Dawkins also commented on other alternative theories that have been presented to Darwin's natural selection. The first is neutralism. This theory believes that most of the

occurring changes in evolution are neutral rather than advantageous or disadvantageous. Dawkins says that this does not represent evolution because neutral selection has no purpose in evolution because we cannot observe it, alluding to practically silent mutations. As a biologist, I do not support this thinking. Neutral mutations do occur more often than harmful or advantageous mutations, but even these neutral mutations have the ability to lead to evolution. It is important that we acknowledge that just because a mutation appears to be silent at one given time, in a different time or environment, that neutral mutation can have varying effects. If these neutral mutations occur in subsequent generations with different combinations of other genes, it could also lead to adverse effects. From a conservative Christian's standpoint, neutralism would fall into the same category as cumulative selection. Because it does not directly threaten their faith, it would not be a direct conflict.

Richard Dawkins presented arguments in The Blind Watchmaker in efforts to disprove God's existence. He argues that natural selection is the Creator of all complexity that is seen throughout nature. Although he does prove that natural selection possesses the power of providing life's complexity, he, overall, does not prove that God has no involvement in nature. He cannot fathom that God could still have everything to do with natural selection, and honestly, I expected no more from him.

The God Delusion

Dawkins uses his book *The God Delusion* to emphasize the flaws in the minds of those who have created a god who is supposedly all-powerful. He opens the book quoting Carl Sagan:

> "How is it that hardly any major religion has looked at science and concluded, 'This is better than we thought! The Universe is much bigger than our prophets said, grander, more subtle, more elegant'? Instead they say, 'No, no, no! My god is a little god, and I want him to stay that way.' (God Delusion 12)

In many ways, Sagan and Dawkins are correct. Dawkins argues that many religious people limit their God without realizing that they are doing so. In all honesty, I agree with Sagan's words entirely. I find this problem occurring far too often in the Christian church. For example, when some Christians decide that they should interpret the first chapter of Genesis literally in relation to the origin of life and Earth, they limit the power of God to a 31-verse excerpt. In their minds, because Genesis does not speak as detailed as Darwin's *On the Origin*, then they feel that their God cannot do the wonders of natural selection. They restrain His powers to the literal interpretation of the Bible rather than truly believing that "He is able to do exceedingly and abundantly above all that we can ask or think…" (Ephesians 3:20). The elders of my church claim to serve such a powerful omnipotent God, but continue to smother Him in limitations.

Dawkins introduces his theory of the "God Hypothesis." He writes, "There exists a superhuman, supernatural intelligence who deliberately designed and created the universe and everything in it, including us." He says that *The God Delusion* presents an alternative frame of thinking. He writes of his alternative hypothesis: "Any creative intelligence, of sufficient complexity to design anything, comes into existence as the end product of an extended process of gradual evolution." Dawkins believes that the God that some conservative Christians refer to results from the complexity produced by

evolution. Ultimately he feels that if something must be deemed God then it should be evolution. Although he is being facetious with this thinking, to some liberal Christians, this hypothesis may stand correct. If we refer back to Dawkins' opening remarks regarding Sagan, conservative Christians, as believers in an omnipotent God, should not limit Him to what we feel should be His way of working. We cannot say that God is not behind the works of evolution and natural selection and if we object to this possibility, then we do not truly believe in a sovereign God.

Upon the proposal of his new hypothesis, he attacks the logic of declaring oneself as agnostic. Agnostic means that one chooses not to take a side with one argument over another, but instead identifies as indifferent. He writes, "There is nothing wrong with being agnostic in cases where we lack evidence one way or the other" (46). Dawkins begins to explain the two types of agnosticism: temporary and permanent. Temporary says that one chooses not to side because the truth has yet to be found. Permanent agnosticism says we may never find the answer. Dawkins says that many scientists put the existence of God in this 'permanent' category, but he begs to differ. He says, "Either he exists or he doesn't. It is a scientific question; one day we may know the answer, and meanwhile we can say something pretty strong about the probability" (48). Honestly, Dawkins makes a statement that he cannot fully support. As scientists, we may never be able to fully answer whether or not God exists. We can only prove natural laws and their resulting processes. However, Christians like my grandmother argue that her faith can answer these questions. Her faith is what allows her to understand the abstract questions that science is too concrete to answer. Our faith supports our God's existence and science can theoretically study this realm; but in reality, science can never penetrate its barriers.

Dawkins continues his argument by saying the issue here lies in the fact that many believe that the probability of the existence of God and the inexistence of God practically equal each other. He says that just because God cannot be proven or disproven does not mean that the existence or nonexistence are on "equal footing" (49). He says that, ultimately, believers possess the responsibility of proving that God exists rather than a responsibility of the nonbelievers to prove that He does not exist. I disagree with this argument solely because if I am not trying to convince him of my beliefs, then I have no reason to prove to Dawkins that my God exists; however, since he wants to drown me with his reasons that God does not exist, then it is his responsibility to disprove God's nonexistence. And as of now, he cannot prove the nonexistence of my God. Regardless of what he thinks, the existence of God falls into the category of "Permanent Agnosticism in Principle" and will never be proven or disproven (God Delusion 46).

Dawkins attacks Stephen Jay Gould's theory of "non-overlapping magisterial." Gould says:

> "The net, or magisterium, of science covers the empirical realm: what is the universe made of (fact) and why does it work this way (theory). The magisterium of religion extends over questions of ultimate meaning and moral value. The two magisteria do not overlap…science studies how the heavens go, religion how to go to heaven" (God Delusion 55).

Although I like Gould's idea, I argue that science does not study why the universe works but instead how the universe works. As scientists, we have no clue as to why natural selection came about as a key aspect of the evolution of life; we simply know how it

contributes to the process of evolution. In my eyes, as a Christian, religion longs for the "why" that Gould mentions. Dawkins asks, "What expertise can theologians bring to deep cosmological questions that scientists cannot?" (56). This is a fair question; however, the answer is simple. Theologians have the urge to find answers these deep "why"-based questions; scientists would rather seek answers to the concrete "how"-based questions.

He now focuses on the typical argument of chance by attacking the theist's argument on the improbability of life occurring on its own. Many Creationists believe that "chance is not likely the designer," and Dawkins agrees with them. However, he says that instead of chance, it results from natural selection. He says that the reason that a designer is not plausible is because it would lead to question who created the designer. He cannot strongly support this argument. Answering Dawkins question parallels trying to answer the cliché question, "Which came first the chicken or the egg?" For example, I could make the argument that, for natural selection to occur, some other selective force had to originally act on natural selection. Although I would never use such a weak elementary argument, Dawkins relies on this method of attack to attempt to dismantle our belief in God. However, as a Christian, his argument does not faze me. I was taught by my grandmother that the dimension of time does not apply to our God. This means that God is the end in the beginning. He needs no creator because He Himself is that creator.

Toward the end of this book, Dawkins analyzes scripture and support his arguments through scriptural interpretation. He argues that some Christians believe they can pick and choose which passages of the Bible to interpret literally and which to interpret metaphorically. He writes that "such picking and choosing is a matter of

personal decision, just as much as, or as little, as the atheist's decision to follow this moral precept…" (238). I fully support Dawkins' claim again in this sense. I understand how this ignorance bothers him because it bothers me as well. It is arrogant and naive to think that as Christians, we have enough power to declare what God says as either literal or metaphorical. If we feel that this is the case, then we do not truly believe that our God is omnipotent.

Furthering his examination of scripture, Dawkins attacks the claim that many Christians make in saying that the Bible helps provide morality. He questions whether scripture accurately exemplifies morality in the story of Lot in Sodom and Gomorrah (Genesis 19). He says that God basically saves Lot from being unrighteous but in return, Lot basically auctions off his daughters instead. Many see this as a tolerable gesture, but if the same were to happen today, is this action really moral at all? In this case, Dawkins forgets that during this time, morality was viewed differently than it is today. Women were seen as property altogether. Of course society would not deem these actions as moral now, but in this time it was not uncommon to give away daughters to men. Also, he chooses this passage of the Bible to easily present his argument. The Bible still has many positive moral lessons such as the story of Job. Many Christians consider Job's story to be ideal for morality only behind Jesus Himself.

Dawkins focuses a lot of his scriptural argument on the harshness of God and the idea that this harshness should not be the foundation of morality. I find it problematic that Dawkins only pulls his evidence from the Old Testament. This is interesting because the New Testament defines a Christian. We know that we serve a sovereign God. We know that He possesses a wrath that we would never be able to withstand. We know that

He is a jealous God. However, Dawkins fails to acknowledge that Jesus Christ provides Grace for Christians to depend on to protect us from the wrath seen in the Old Testament such as the brutal killing of the daughter of Jephthah. Our God may be a jealous God, but He provided us with Jesus, the epitome of morality and the ideal way that Christians are to strive to embody.

Although Dawkins presented a number of well-supported arguments admittedly, he still did not prove that Christians' belief in God is a "delusion." Overall, I feel that Dawkins' works cause more harm than actual good. He helps to fuel the divisive atmosphere that surrounds some Christianities and science. As mentioned before people like Dawkins create the tension that exists today. Rather than attempting to present his claims that science is indeed real and accurate, he prefers to prove that religion is false and problematic. To fully mend the gap between some Christianities and certain aspects of science, we must eliminate the discordant atmosphere that currently surrounds them.

Can a Darwinian be a Christian?

Michael Ruse is a philosopher who believes that Christianity and evolution can coexist. In his book *Can a Darwinian be a Christian?* he presents his reasoning behind his claim that Darwinians can indeed be Christians. To understand his thinking, we must first clarify what he terms as a "Darwinian." He says that "at the most basic level, one is going to accept evolution as fact" (Ruse 28). From the path of evolution, a Darwinian would predict and expect "life as a tree of some form" (Ruse 28). From this perspective, I would identify as a Darwinian myself. He also makes sure that the reader understands

that individuals that claim to be Darwinian can vary in their opinions. He also writes that "a Darwinian has to regard natural selection as the most important evolutionary mechanism that there is" (Ruse 28). Overall, Darwinians exist over a large range of beliefs.

In hopes of comparing basic Christianity with Darwinism, Ruse explains his interpretation of Christianity. He explains that the central theme of Christianity "is the existence, the life and death, of Jesus of Nazareth…" (Ruse 33). His actions and teachings disturbed the Jewish leaders, and the leaders requested that the Roman authorities crucify him. Christians believe that since Jesus was the Son of God, he rose after his death and ascended to a heavenly throne. Ruse also explains the importance of a Christian having monotheistic beliefs. He explains that although it is monotheistic, "Christianity is Trinitarian, believing that God has left His spirit—the Holy Ghost—to be with us now that Jesus is gone" (Ruse 33). It is vital that we categorize Jesus, God, and the Holy Ghost as one being: God. As a Christian, the trinity accurately assesses of Christianity in a snippet. Belief in the resurrection of Jesus epitomizes our faith. Although the beliefs vary among the countless denominations within Christianity, almost all of them acknowledge and emphasize the crucifixion and resurrection of Christ.

Ruse also mentions the Christians' expectations of Heaven. He says that expectations vary by the person, but that all Christians will agree that "it will be an ecstasy and closeness with God" (Ruse 35). Ruse is right; nobody can tell exactly what Heaven will be like, but every individual has his/her own perception of what shall come with a unique intimacy with God. He also mentions the Reformation era and the rise of the Protestant beliefs. He explains the reasoning behind England splitting from the

Roman church (England's Henry and Elizabeth wanted to be popes). This era also allowed the bible to become more accessible to all believers rather than just clergy. Ruse continues by summing up the differences between Protestant and Catholic beliefs. For Catholics, "the church is a major mediating phenomenon: the Pope and the lower clergy, the ongoing creation of doctrine, the signs and symbols and rituals, and much more, are the building blocks of Christianity" (Ruse 40). For the Protestants, "the relationship to God is much more immediate. Ultimately, one is on his own, facing one's creator directly" (Ruse 40). This is very true; as a protestant, we rarely rely on someone else's involvement in our spiritual salvation. We ultimately believe that we can help each other, but at the end of the day, only the individual has the power to obtain salvation.

Ruse explains the difference between revealed religion and natural religion. Revealed religion focuses on beliefs derived from faith and is accessible to anyone who seeks it. Natural religion focuses on beliefs derived from reason and "is open only to the educated and trained" (Ruse 42). In the Protestant form of revealed religion, Ruse introduces the "major problems with simple literal readings of the biblical texts" (Ruse 43). He continues: "The Bible may be the word of God, but it is certainly not the simple, straightforward word of God" (Ruse 43). These complications have been the foundation for most of the criticism for theists.

To elaborate, Ruse brings attention to the ideology of Saint Augustine of Hippo. Augustine expresses his stance on the literal interpretation of the bible; literal interpretations for the Bible only make the atheist' argument stronger. Ruse writes, "Were one to insist on an absolutely literal reading of Genesis, one would only be giving comfort to the enemy, who would seize on the inconsistencies both within the Bible and

between the Bible and commonly accepted beliefs" (Ruse 51). Augustine also supported the idea that Moses was forced to write metaphorically due to the lack of knowledge in his audience and even his own lack of knowledge. Similarly to the approach of Augustine, Calvin brought another approach to interpretation: "accommodation" (Ruse 53). He thought that "the Bible is sometimes written in such a form as to make itself intelligible to scientifically untutored folk who would not have followed sophisticated discourse" (Ruse 53). Conservative Christians, however, are timid when asked to interpret that Bible metaphorically. Most of the issues between some Christianities and evolution result from their determination to interpret Genesis literally. Through this ideology, Ruse explains that for a literal reader of the Bible, "Darwinism and Christianity part ways right at the beginning. There is simply no way that a Darwinian can be a Christian" (Ruse 56-57).

According to Ruse, consciousness also allows Christians to believe that their God exists. Ruse says that one of the major functions of consciousness is "that of serving as a filter and a guide and coordinator to all of the information thrown up by the brain" (Ruse 72). He argues that science cannot explain why consciousness exists or why humans possess it. He says that they may never be able to fully understand. When questioning why our consciousness allows us to perform such complex thought processes, Ruse says, "No one, certainly not the Darwinian as such, seems to have any answer to this" (Ruse 73). With that in mind, he offers an alternative way of thinking based from Genesis 2:7. He says that as God made us, we are in the image of Him. He explains that Genesis is not referring to our physical appearance, but instead our spiritual and moral existence. Ruse says that with that "breath of life" from the book of Genesis that we were made "in

His mental or intellectual image" (Ruse 74). He continues to describe what makes us different from other living creatures: "Bound up with thought and reason is the capacity to act freely. We, like God, have choice" (Ruse 74). Genesis 2:7 had always given me trouble when thinking of scientific explanations, but Ruse brought a different perspective here.

To break down the importance of the possession of souls, Ruse introduces his audience to Reductionism. He describes "Reductionism" as "the philosophy or methodology where the aim is to explain away everything in terms of molecules and the like and to deny reality to all higher-level entities like minds and souls and so forth" (Ruse 77). He continues this introduction of reductionism by categorizing Darwinism as a reductionist theory. Darwin's theory is reductionist because it breaks down complex life forms into simple uniform genetic codes. He compares life to viewing the Eiffel tower from the right and from the left. He says that this is not two different pieces joined together to give on a big tower, but instead it is a whole tower that can just be seen from different angles. DNA is this same way. It is uniform and can just be viewed (rearranged) different ways to give us different views (organisms). Ruse writes:

> The very crux of Darwinian explanation of distinctiveness of humankind is that we are ordered, and thus can function in ways that are not possible for other animals. It is not that we have something different at the substance level, but rather that we are different because of the way that we are put together: by natural selection for adaptive ends. (Ruse 79-80)

This is an issue because having and understanding a soul cannot be broken down into smaller molecule-like quantities. As a matter of fact, Ruse says, "The essence of Christianity is that it is non-reductionist, for minds and/or souls do have genuine existence" (Ruse 77).

Ruse finally addresses Dawkins' argument against intelligent design, also known as the "teleological argument" (Ruse 111). Like Dawkins, Ruse immediately calls on Paley to better support the teleological argument. Paley compares an ordinary eye to an ordinary telescope: "As far as the examination of the instrument goes, there is precisely the same proof that the eye was made for vision as there is that the telescope was made for assisting it" (Ruse 112). The telescope is knowingly designed by a telescope designer. Ruse says in response to this, "Hence an eye demands an eye maker—or rather, an eye designer" (Ruse 112). Dawkins' explanation for the argument of design is that we generally downplay the power of natural selection. He argues that organs like the eyes result from natural selection; he calls the eyes adaptations. Some theologians agree with Dawkins except they do not see the eyes as "just idle bodily parts or appendages, but things with a purpose or end function" (Ruse 112). Ruse strategically places "purpose" here to allude to their possible divine origins.

As a biologist, I support Dawkins' argument for natural selection leading to the eyes that humans have now. Similarly to Dawkins' echolocation example, natural selection is more than capable of producing complex functioning organs. It explains the complexity of the eye; in contrast, a conservative Christian would argue in support of Paley. They would agree that, just like someone had to purposely design the telescope, a Creator purposely designed our eyes and humans in general. Their perspective has flaws

due to their lack of understanding of natural selection, but even with the eye being a product of natural selection, it does not eliminate God's role within the process.

Ruse closes the chapter with the thoughts of Haldane: "Our only hope of understanding the universe is to look at it from as many different points of view as possible" (142). He simply means that he feels that both Christianity and Darwinism approach the natural world too simplistic. He feels that there is more than we can actually fathom and to an extent, I completely agree. I do not think that we, humans, have the mental capacity to fully grasp and understand everything that is around us. With that being said, Christianity gives one the opportunity to think as unfathomable as possible. Ruse said it perfectly, "Being a Darwinian does not compel one to be a Christian; but, because one is a Darwinian one is opening the way for someone to be a Christian" (142). I interpret Ruse that the discoveries of scientists who identify as Darwinian actually make the natural world appear to be flawless in every aspect. They constantly reveal the true beauty and the process that make everything possible, almost exposing one to search for supernatural interference. I believe that truly knowing the phenomena that exists within science makes my faith that much more unbreakable.

Conclusion

At the beginning of my journey through science and faith, I was naive in believing that I was ready to confront such a controversial and large topic. Actually, it was even arrogant. Through this journey through college, I have realized the complexity that exists in my interests. Through my ignorance, I originally set out to bridge the gap between the concepts of science and the beliefs of certain expressions of Christianity, but I soon realized that it is not that easy.

Through my years of struggling with my faith and evolution, I am still not completely finished with the task at hand; however, I have come to an understanding. Again, the theory of evolution is the gradual change of population over a span of time. Recently, it has been brought to my attention that, in a sense, evolution can be seen as a mode of transportation through time. Evolution, as an analogy, is the vehicle that moves a species from point A to point B. It is the observable mechanism that facilitates both the changes within a species and between species and has resulted in an astonishing variety. Although evolution is the vehicle that explains how we arrived from point A to Point B, the vehicle is not acting alone. As a Christian, I believe that God has continuously had a presence in the process of evolution. Because we know that the vehicle of evolution has propelled us forward, I have come to the conclusion that God must be the built in navigational system. Without the G.P.S. system, the vehicle has no path. It has no vision or understanding of the relationship of point A and point B. To be more specific, the

vehicle is only able to understand its current location rather than envisioning the future location. God has seen point B before the vehicle was even ignited. But because my God is so powerful, I must note that He is also the manufacturer of the vehicle. He so perfectly assembled evolution that now, all He has to do is navigate the direction that the vehicle travels. He is the voice that has and continues to guide the process of evolution, and basically, without Him, the vehicle would not have been created and nor capable of facilitating such complexity alone. In layman's terms, evolution has been fine tuned in such a way that it is only logical that a sentient being caused this occurrence, and I believe this being to be the Christian God.

In my attempts to effectively explain evolution to the elders of my faith, I have learned that many of the issues surrounding evolution and our beliefs are forced and not naturally occurring. I noticed that many solutions to dissolving the tension exist, but they must be sought. Like most problems today, the concerns of some Christians and evolution are self-inflicted. I have learned that, as humans, it is natural for us to fear what we do not understand. Like Jericho, we build walls around our beliefs and pray that they can withstand any attempts to breach them. When threatened, we distance ourselves as much as we can and would rather push our "danger" to the side rather than confront it. I know this to be true because only 4 years ago I, too, had my Wall of Jericho. However, my Honors 102 professor Dr. John Brown was my Joshua. He revealed to me that my wall had many flaws. The key difference in my journey and the journeys of many others is that, when confronted by evolution, I did not back down. I welcomed the challenge, and through my journey, I have found peace within both evolution and Christianity.

Through this journey, I also had to realize that the issue was bigger than simply evolution and Christianity. The history of the conflict between religion and science has existed well before Charles Darwin. It goes back as far as the 15th Century. It was simplistic of me to believe that such a rich controversy had only emerged recently, but this study has given me a broader perspective. I have recognized that almost 500 years ago, people declared the Copernican system ludicrous. They believed it to be an absurd hypothesis that would never be considered fact. In the 1500's, it was hard for the people of that time to fathom anything other than our planet being the center of the universe, and if I lived in this time, I would have concurred with them. However, if we fast forward 500 years, it is now hard for my generation to understand how the people of the 16th Century could ever have believed that the sun was not the center of our universe. This brings me hope for the future of understanding evolution and for Christians such as the elders of my church. The theories of natural selection and evolution are mere infants compared to the time that the Copernican theory has had to mature. In 300 more years, who is to say that those generations of Christians will not look back on us and laugh at how we once called evolution absurd. Not only have I found faith in my God's abilities throughout my time of study, but I have also found a sense of hope in what is to come.

Finally and most importantly, I have learned that the journey is not complete. As a Christian, the process of finding peace with science is ongoing just as the discoveries of science are ongoing. Through this research, I have realized that there is no single concrete solution to the present controversy. It has been helpful to have a larger perspective of the conflict of science with Christianity, and a broader perspective of the

many forms of Christianity. Indeed, science is evolving, and while my church elders may disagree, Christianity is also evolving and changing.

The beauty of the abstractness of the relationship with Christian faith and evolution is its elasticity. Because we serve such a powerful God, He is not limited to simply my interpretation of His involvement with evolution. He instilled in each individual Christian the same abilities to find peace with these two seemingly opposite entities. This is what makes the journey not only interesting, but also life-long. Although I have found peace, there is no "period" at the end of my personal journey. The story of my journey in science and in faith is not complete. I am waiting to discover what the next chapter will be so I finish this thesis, and my title with a semicolon;

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